Geophysical Research Abstracts
Vol. 17, EGU2015-9553, 2015
EGU General Assembly 2015

Geological and InSAR surveys highlight tectonic hazard in densely inhabited areas on the lower southeastern flank of Mount Etna volcano, Italy

Marco Neri (1), Eugenio Sansosti (2), Francesco Casu (2), Anna Leonardi (1), Antonio Pepe (2), Susi Pepe (2), and Giuseppe Solaro (2)

(1) Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo - Sezione di Catania, Piazza Roma 2, 95123 Catania, Italy, (2) Istituto per il Rilevamento Elettromagnetico dell'Ambiente, CNR-IREA, Italy

A constant seaward sliding mechanism is affecting the eastern to southern flanks of Mt. Etna volcano, involving an overall on-shore area of >700 km2.The margins of this unstable area are marked by the Pernicana Fault System to the north and the Ragalna Fault System to the south-west. The unstable area is divided into several blocks characterized by different kinematics and delimited by active faults crossing, in several cases, urban areas, towns and villages. One of these structural discontinuities is the Trecastagni-S.G.La Punta-Aci Trezza fault system, a tectonic structure extending from the volcano summit (where it trends NNW-SSE), to the lower southeastern flank (trending NW-SE) and reaching the coast at the Aci Trezza village (WNW-ESE and E-W). The last segment of this tectonic system crosses several important roads and man-made structures within Aci Trezza, and continues for a few kilometers off-shore crossing the Faraglioni stacks-Lachea island. Recently, analysis of long-period InSAR data has added some details to the sliding motion on the lower south-eastern flank of the volcano, particularly on the S.G.La Punta–Aci Trezza fault segments. Field geological and instrumental data confirmed the slip activity and the extension of the tectonically disturbed areas, highlighting a transition zone between the two main fault segments. On the other hand, some of the features detected by InSAR are not clearly visible in the field and were never detected before by classical geological surveys. These results are of crucial importance in terms of hazard related to tectonic movements, especially in densely inhabited zones such as the south-eastern flank of Etna, where more than half a million people live. The structural details obtained through these kinds of studies may guide future land use planning appropriately also within towns and villages, where aseismic and seismogenic very active faults are evident at the surfaces.